with the Author's kind regards

A SECOND COMMUNICATION

ON THE

ENDEMIC HÆMATURIA OF THE CAPE OF GOOD HOPE AND NATAL.

BY

JOHN HARLEY, M.D. Lond., F.R.C.P., &c.

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Received June 8th.—Read June 22nd, 1869.

In the 47th volume of the 'Medico-Chirurgical Transactions,' I called attention to the existence of an endemic form of hæmaturia in certain parts of the Cape of Good Hope and Natal; proved that the disease was due to a species of Bilharzia; and attributed the well-known hæmaturia of Mauritius to the same cause.

More than five years have elapsed since these observations were made known, and yet, so far as I am aware, no other observer has repeated them; I therefore feel it necessary that I should lay before the Society, and through it, the profession generally, such further information as I have been able to obtain since the date of my former communication.

Since returning to Port Elizabeth, my friend Mr. Dunsterville, F.R.C.S., has furnished me with the following illustrations of the disease.

1. Two small renal calculi from a young man aged nineteen. "He has had the characteristic hæmaturia for years, and of late has suffered much from occasional paroxysms of pain due to the passage of renal concretions."

The progress of the disease and its attendant symptoms in this patient are identical with those of the case next referred to.

"2. Mr. G. D—,[1] still (June, 1866) continues to pass renal calculi occasionally, accompanied as usual by severe lumbar pain and suffering. I send, enclosed, the last voided—a very small one."

I crushed up this minute crystalline body after it had lain in a dry state for three years, and after treating it successively with solution of potash and nitric acid discovered by the aid of a half inch object-glass one entire egg of Bilharzia, and several unmistakable fragments of others.

3. At the same date (June, 1866) Mr. Dunsterville states: "I really think we have not nearly so much of the hæmaturia as formerly. I have not seen a case for a very long period, and certainly none has offered which gave me a chance of sending you any of the deposits or post-mortem scrapings of mucous membrane which you so much desired."

4. Two years previously Mr. Dunsterville sent me by his friend and colleague Dr. Rubidge two samples of urine secreted respectively by two brothers, William and Philip Jones. They had the usual symptoms of the disease. The urine of the first-named patient was mouldy, strongly ammoniacal, and had deposited much phosphate. It nevertheless contained numerous well-preserved eggs of Bilharzia. The secretion from the other patient was fœtid and had deposited much uric acid. It also contained well-preserved eggs of the parasite, and in the few drops examined there were four adult cheese mites (*Acarus domesticus*), and two advanced eggs of the acarian, distinguished from those of Bilharzia by their uniformly rounded extremities. I mention this fact because, having only twice before observed acarus in the urine, it chanced each time to be that of a patient suffering from the endemic hæmaturia.

Dr. Rubidge, of Port Elizabeth, wrote me the following in 1866:

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[1] 'Medico-Chir. Trans.,' vol. xlvii, p. 65.

"In compliance with your request that I would furnish you with all the information I can obtain on the subject of the endemic hæmaturia of this and the neighbouring town of Uitenhage, I send you the following notes: It is almost strictly confined to these places and to Fort Beaufort."[1]

"It occurs in young Europeans or persons of European descent. The natives,[2] as far as I have inquired, are not subject to it, nor I think the Malays or negroes imported in former times as slaves."

"Pretty extensive inquiries lead me to believe that bathing in rivers has something to do with the production of the disease. I have never met with a case in boys who did not frequently bathe in the Zwarlkojss or Booker's river. On the other hand, those few boys in the families of my patients who are free from the disease, bathe in the sea only. My impression is that the parasite gains entrance into the skin while the individual is bathing in the river, and I may mention that the lad W. Jones, whose urine I took home to you (see above, 4), described a sort of urticarious eruption attended with great irritation, as a frequent result of bathing in the Booker's River.[3]

"The hæmaturia never, I believe, occurs in children under five or six years of age. Females are rarely affected, if at all. I have not myself observed a single well-marked case in this sex."

In a letter to my friend Mr. Henry Lee, Dr. S. Spranger, referring to my observations on the hæmaturia of the Cape, relates two cases. The one is too doubtful, I think, to advance as an instance of the disease; the other is as follows;

"Mr. S—, of Alice, consulted me about two years ago, suffering from hæmaturia. The symptoms were those described by Dr. Harley, only of a very aggravated nature. They were of long standing. The patient was a Scotchman, aged seventy-six, and had been hale and hearty. He was more or less under my care for three months. He died worn out by the various concomitants of his disorder. As I was in a distant part of the colony at the time of his death, no post-mortem was made. I would remark that these cases are not confined to Uitenhage and Port Elizabeth, I have found them in Alice[1] and in British Kaffraria. *Army surgeons do not commonly see many of those living on the soil,* and their troops do not remain long enough to contract the disease.[2] The water over almost the whole of the eastern part of the colony is *brackish,* but the disorder is more probably contracted from Vleys or ponds by the wayside, than from the running streams."

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[1] Mr. George Saunders has not observed it here. See 'Med.-Chir. Trans.,' vol. xlvii, p. 70.

[2] On this point see corroborative statement further on—p. 386.

[3] I carefully examined a number of fresh-water mussels (*Unio Kaffre*) from this river, and sent to me by my friend Mr. Dunsterville. I failed to detect any trace of Bilharzia, but the paleal membrane of every individual was thickened and speckled by vast numbers of the acarian *Hypopus* in every stage of development.

Thus much for the disease in the Cape Colony, I now turn to Natal.

In my former communication, I concluded from the statements of Dr. W. Johnstone, and Mr. Joseph Henderson ('Medico-Chirurgical Transactions,' vol. xlvii, pp. 67 and 70), that the parasitic disease was prevalent in Natal. I am now enabled to advance proofs of the truth of this conclusion.

Case of endemic hæmaturia in a colonist of Natal.—The patient arrived in England in the spring of the present year and continues at the present time under my care. The following is his history. He is a healthy and remarkably active man, aged thirty-seven, is married and has a healthy young family. He has resided near Verulam, on the banks of the Umhlazren, a tributary of the Umhloti, since the year 1860, and first noticed hæmaturia January 1868. The symptoms are the passage of small shreddy flakes or strings, either opaque and colourless, or like minute clots of blood, and occasionally at the end of micturition a teaspoonful or two of bloody urine. There is a slight tickling sensation at times in the hinder part of the urethra never amounting to pain, but sufficient to cause inconvenience, and, at times, annoyance. Occasionally there is a feeling of slight oppression in the hypogastric region accompanied by lassitude. The general health is very good.

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[1] Contradictory evidence, see 'Med.-Chir. Trans.,' vol. xlvii, p. 70.

[2] It appears that a residence of six months is sufficient. See a subsequent page—7.

The first specimen of urine (a tablespoonful) which he brought to me was turbid and of a blood colour. It deposited a layer of blood-stained organic matter in which were entangled many of the characteristic ova of Bilharzia Capensis. The next sample was of natural colour, deposited a flocculent, specky mucus, together with one or two larger and more consistent flakes of mucus, of a dirty white colour or more or less completely stained with blood. The largest did not much exceed a hemp seed in bulk, and contained imbedded within it between two and three hundred eggs of the parasite.

I have examined the urine voided daily for months, and on each occasion found numbers of the ova floating freely in the urine, and also, when it is present, imbedded in a dense opaque mucus, which seems to be their appropriate nidus. The fertility of the parasite is wonderful. When I first saw my patient he was voiding hundreds of eggs daily, and sometimes they could be numbered by thousands.

The urine itself is normal in quantity, and—apart from the products of the parasite, and occasionally a little blood and albumen—in composition also. There is no tendency to ordinary cystitis or to ammoniacal alkalinity of the urine. Indeed it is constantly acid and frequently deposits lithic acid on standing. The sp. gr. ranges from 1015 to 1025, the colour is rather pale. The albumen of course varies with the quantity of blood contained in the secretion. At most it does not exceed in bulk one fifth that of the urine, and when the secretion is as colourless as whey, only a very faint opalescence is produced by the means requisite for the precipitation of the albumen.

As to the parasite itself, I have nothing to add. The figures which accompany my first papers furnish a complete delineation of the parasitic products in the present case. The mucus in which the eggs are for the most part imbedded, is derived, I believe, from the mucous crypts in which the animal takes up its abode, the growth of the mucous corpuscles being due to the irritation caused by the body of the parasite and its eggs, just as occurs in the vegetable kingdom in the development of a ball or gall on the oak around the ova of *cynips*. As soon as the solid mucus fills the crypt it is forced out by the continued production of eggs, and, being thus roughly moulded, appears in the urine in the form of little pellets or strings. Some softer or more fluid masses become disintegrated and form the usual flocculent mucous deposit.

Treatment.—The parasites being thus safely lodged in the mucous crypts, the mouths of which are closed by their deposits, it would be of course useless to attempt an attack on the parasite by local means. Even if the body of the parasite lay bare upon the surface of the mucous membrane the injection of styptics into the bladder would probably do more injury to the host than to the parasite. In my opinion, topical treatment is therefore out of the question, and we are reduced to the use of such general remedies as passing unaltered through the kidneys may exercise an injurious effect on the parasite. I have shown that the active principles of belladonna and hyoscyamus are wholly removed in an unchanged condition in the urine ;[1] and I am hopeful that these substances thus brought in contact with the parasite may at least restrict its development, and by constantly dwarfing its growth, ultimately destroy it. Guided by these considerations I prescribed the following for my patient : ℞ Extracti hyoscyami gr. v, Oxydi argenti gr. ¼ ; fiat pilula, omni nocte sumenda. And with the view of annoying the parasite as thoroughly as possible I gave a morning dose composed of the following : ℞ Olei Cubebæ ♏x—♏xv, Spiritus vini rectificati ʒij, Infusi Absinthii ad ℥iss ; fiat haustus.

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[1] 'The Old Vegetable Neurotics,' pp. 213—336.

Up to the present time I have reason to be satisfied with this treatment. Since it was commenced a little free blood has been only twice voided; the albumen has disappeared; free mucus, which previously formed a large dense cloud, is now rarely present, and the oviparous function of the parasite is decidedly less active.

Further information respecting the prevalence of the disease in Natal.—My patient tells me that he is acquainted with five male adult Europeans resident in his district who are affected by the disease. Their symptoms correspond exactly with his own, but some have lumbar and hypogastric pain superadded. The parasite appears to be limited, as in the Cape, to certain localities near the coast. Of the two known habitats one is the Sterk Spruit, a tributary of the Umlazi, situated about seventeen miles from the sea, in County Durban;[1] and the other in Victoria, the Umhlazren, a tributary of the Umhloti, distant about five miles from the coast. These two stations are about twenty-five miles apart. How far the contamination of the two principal rivers above mentioned extends inland remains to be determined. It appears that the elevated regions of the interior[2] are free from the parasite.

One fine young man, aged twenty-eight, is a great sufferer. He had resided the greater part of his life up the country, and had only recently come down to the coast, and since that time he has contracted the disease.

My patient employs a large number of men, chiefly coolies imported from Madras and Bombay, and some Kaffirs. The coolies become affected with hæmaturia after a residence of five or six months in the colony. They complain at intervals of lassitude and inability to work, and it is not an uncommon event for three or four of the men together to prefer their complaints to my truly sympathising patient, bearing on castor-oil leaves the little bloody strings voided in the urine, as evidence of their malady.

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[1] 'Medico-Chirurg. Trans.,' vol. xlvii, p. 70.

[2] Pietermaritzburgh and Greytown, situated about fifty miles from the coast, have the altitudes of 2000 feet and 3580 feet respectively.

This gentleman further states that the Kaffirs are wholly free from the disease, and this corroborates the previously expressed opinions of my friends Dr. Dunsterville and Dr. Rubidge. The last-named gentleman assigns bathing as the means of receiving the parasite, and my present patient tells me that he bathes every evening in the waters of the Umhlazren, which flow through his private bathing house. The workmen also bathe frequently in this river.

It is certainly more reasonable to suppose that the parasite gains access to the bladder and kidney by the urethra than to assume that it reaches the urinary organs—and these only, as appears to be the case at first—through the general circulation. But in seeking to know the mode of invasion we must be prepared to turn our investigations readily in any direction. The Kaffirs, it appears, are free from the Bilharzia, while they are infested with tape-worm; the colonists and coolies, on the contrary, are very liable to the invasion of Bilharzia. With regard to the habits of these two races, Mr. Le Mesurier communicates the following, which is inconsistent with the notion that the parasite gains access to the body during the process of bathing. "The Kaffirs are very attentive to personal cleanliness; they bathe and wash every day, and in the hot weather three or four times a day. The coolies, as a rule, are not cleanly in their persons, and they bathe much less frequently."

On mentioning salads to my patient, as a possible means of taking the parasite, he said, "I do eat salads, and all green food very freely, and your question reminds me of a curious and perhaps important fact. On the estate adjoining ours there is an abundant supply of water-cress, and one of the two Europeans living on the estate has been troubled for a long time with the hæmaturia. They both make water-cress a standing dish at their table; I obtained some plants from them and formed a bed, and it was after occasionally eating the cress for breakfast that I discovered I was affected with the disease."

One question I hope to be able to determine before long, viz. whether the parasite is able to attain mature development in the animal body, the egg being the starting-point.

It is to be hoped that those of our medical brethren who have the means of tracing the development of the parasite in its native habitat will lose no opportunity of doing so. The disease is altogether preventible, and he who may be fortunate in discovering how and where precisely the enemy is to be avoided will merit the gratitude of his countrymen.

Postscript.—At page 2 I have called attention to the occasional presence of *Acari* in the urine. It is remarkable that I have repeatedly observed the same fact with regard to the secretion of my Natal patient.